MONTANA UNDERGROUND STORAGE TANK PROGRAM NEWSLETTER

MUST News

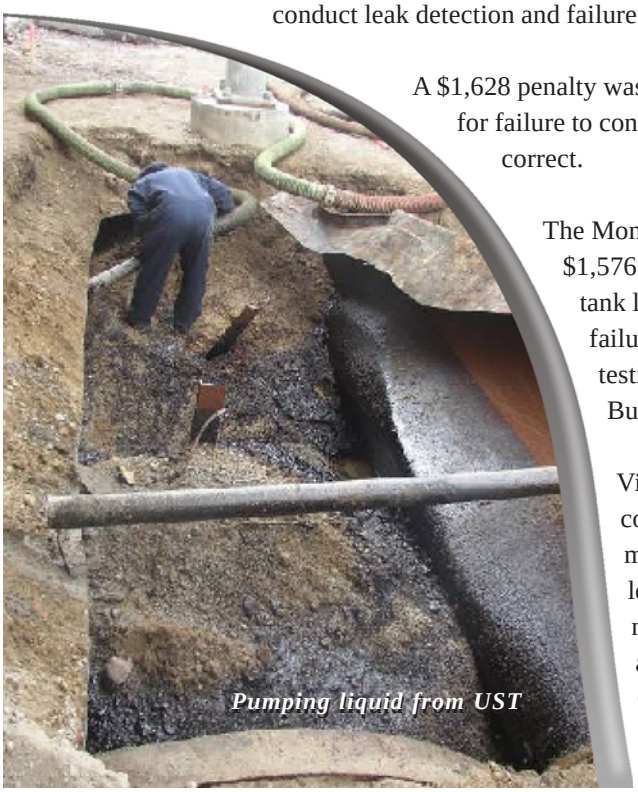
Bitterroot – photo courtesy of BigSkyFishing.com

Department of Environmental Quality Summer Issue

2007 Underground Storage Tank Act Enforcement Review

The Department of Environmental Quality has collected penalty payments totaling $19,374 for violations of the Underground Storage Tank Act identified in fiscal year 2007.

Rimrock Oldsmobile of Billings paid a settlement penalty in the amount of $1,415 for failure to conduct leak detection and failure to timely correct.



Pumping liquid from UST

A $1,628 penalty was paid by the Great Falls Transit District for failure to conduct leak detection and failure to timely correct.

The Montana Department of Transportation paid a $1,576 penalty for failure to conduct monthly tank leak detection monitoring based upon the failure to have at least six months of sampling, testing or monitoring records available at its Butte district headquarters.

Violations identified as the failure to conduct monthly tank leak detection monitoring based upon a failure to have at least six monthly sampling, testing or monitoring records for the latest 12 months at the Hellgate Trading Post, Missoula County resulted in a $630 penalty for Tabish Brothers Distributors, Inc.

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Inside This Issue

Montana Department of Environmental Quality

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2007 Underground Storage Tank Act Enforcement Review - *continued from page 1*

Michael's Convenience Stores, Inc., of Kalispell paid $6,090 at its Michael's West location for violations consisting of failure to report conditions constituting a suspect release within 24 hours of discovery and placing wastes where they caused pollution of state waters.

Rocky Mountain Oil, Inc. of Cascade paid a $1,680 penalty for failure to conduct monthly tank leak detection monitoring based upon the failure to have at least six months of sampling, testing or monitoring records available.

Failure to install any corrosion protection in accordance with permit conditions and in accordance with Montana Critical Installation Elements resulted in an enforcement action against Leonard Wallis for violations at the Safeway Gasoline facility in Helena. Mr. Wallis paid a $240 settlement penalty for his violations.

C Store, Inc., agreed to a $3,020 penalty for violations at its St. Regis facility, including failure to conduct monthly tank leak detection monitoring based upon the failure to have at least six months of sampling, testing or monitoring records available; failure to provide sufficient corrosion protection; failure to use spill prevention; and failure to correct violations within the allowable time frame.

Community Conservation Association, Inc., of Bozeman was cited for violations of the Underground Storage Tank Act for failure to conduct the most recent required cathodic protection test on an active UST. A settlement penalty in the amount of $720 was paid for the violations.

Three Bears Alaska, Inc., of Wasilla, Alaska, reached a settlement agreement with the DEQ, which included a $1,375 penalty for failure to conduct a compliance inspection between 90 and 120 days after issuance of a conditional operating permit and for operating a UST without having a valid operating permit at its Three Bears Alaska store in Butte.

Morris Marketing Company of Butte paid a $1,000 penalty for depositing a regulated substance into an UST without a valid operating permit on seven occasions. For more information, contact Darrick Turner, Enforcement Division UST Liaison, at (406) 444-1504 or dturner2@mt.gov. ■

Documenting Leak Detection with an ATG

For fiscal year 2007, six of the eleven enforcement actions were a result of the failure to maintain monthly records documenting monthly tank leak detection monitoring. These violations could have been avoided with adequate recordkeeping.

For those operators relying on an automatic tank gauge (ATG), the Department requires that owners and operators produce, visually inspect, and retain release detection monitoring records generated **monthly**. A history showing that monthly tests were conducted does not document monthly monitoring.

Acceptable monthly ATG records should include the following:

- Facility name;
- Tank identification;
- Date of test;
- Testing standard, i.e. 0.2 gallon per hour;
- Volume of product in tank during testing; and
- Test results, i.e. pass, fail, inconclusive.

ATG Alarm

Deadline for Corrosion Protection

Montana UST Regulations require that metal vents and risers in contact with the soil be protected from corrosion. Many are not.

In October of 2002, the UST program was working through its first round of third party compliance inspections while still under the requirement to prohibit fuel delivery for facilities not in full compliance. It was not practical to get all the vents and risers protected in time, so we wrote the ten year variance.

That was six years ago. The variance expires on October 1, 2012. Hundreds of facilities need this work done. Don't get caught in the last minute rush. ■

Revitalizing Abandoned Gas Stations

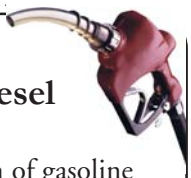
There are more than 450,000 sites identified by the U.S. Environmental Protection Agency (EPA) as "Brownfields" sites across the U.S. defined as having some level of soil and groundwater contamination from former industrial or commercial usage.

Approximately 200,000 of these sites historically operated as gas station sites and are impacted by petroleum hydrocarbon contamination. Thus, they are referred to as "Petroleum Brownfields" sites. In many cases, the presence of these sites and their associated soil and groundwater contamination impacts the environmental and economic health of surrounding neighborhoods. Frequently these sites present difficult challenges for potential redevelopment due to bankruptcy or insolvency and the inability to fund assessment and cleanup activities required by state environmental agencies, such as the Montana DEQ, in the absence of a viable property owner.

EPA recently began awarding grants to local communities, states, tribes, and economic development organizations to assess and cleanup sites that qualify for the Petroleum Brownfields Program. Federal efforts began in 2007 when EPA initiated a Petroleum Brownfields strategy and worked with interested stakeholders to improve efforts for reusing former gas stations and petroleum-impacted properties. In 2007, EPA provided approximately $22.4 million in grants to 110 local communities to cleanup and assess Petroleum Brownfields sites. Part of those grant dollars includes revolving loans to enable states, local communities, and tribes to make low interest payments to complete cleanup activities at Petroleum Brownfields eligible properties. The list of communities receiving these grants is organized by EPA Region and can be found on-line at **www.epa.gov/oust/rags/pbgrants.htm.**

Montana communities include formerly used service stations that may qualify for Petroleum Brownfields funding. The Montana DEQ Petroleum Brownfields is actively working with communities to identify eligible Petroleum Brownfields sites. For more information, contact Jeff Kuhn, Manager of the DEQ LUST/Brownfields Section at (406) 841-5055. ■

(Information for this article came from the USEPA Office of Underground Storage Tanks Newsletter, April 2008.)



Petro Factoid…
BTUs of Gasoline and Diesel

What contains more energy — a gallon of gasoline or a gallon of diesel?

Answer: **Diesel**. A gallon of diesel contains 130,500 Btu, about 13% more energy than the 115,000 Btu in a gallon of gasoline. This helps soften the blow of the higher cost of diesel fuel, which averaged $4.60/gallon across the U.S. on 7/28/08 when gasoline was only $3.96/gallon.

So, which is a better overall bargain for buying your Btu's?

Answer: **Gasoline** is still the better buy. Based on 7/28/08 average U.S. fuel prices, a thousand Btu of diesel cost you 3.52 ¢ while a 1000 Btu of gasoline only cost you 3.44 ¢.

UST Systems and Alternative Fuels

The combined forces of need, opportunity and politics promote alternative fuel production, distribution and use. But because alternative fuels are chemically different from gasoline or diesel, station owners should be aware of certain compatibility issues that may affect their fuel distribution networks.

Ethanol, methanol and biodiesel are blended with gasoline and diesel to make alternative fuel. Gasoline and diesel are designed as alternative fuels when more than 10% of the volume of a fuel is blended with those products. These alternative fuels have the potential to create problems that can be classified in two categories: leak prevention and fuel quality.

Fuel quality is not within Underground Storage Tank System (USTS) regulatory purview; however, leak prevention is. Leak prevention rules state that "owners and operators must use an UST system made of or lined with materials that are compatible with the substance stored in the UST system." It is generally accepted among regulators that UST systems must be UL-certified or manufacturer (or other 3rd party) approved for the storage of that particular fuel blend.

Alternative fuel blends run from 10% to 100% in concentration. Different concentrations have different chemical characteristics. Ethanol fuel is most incompatible with elastomers and polymers at about 25% concentration. Though the most common concentrations are labeled E-15, E-85, B-20, and B-100, actual blends vary about 5% in either direction. Other concentrations are marketed or created when tank blends are changed from one concentration to another.

EPA's Office of Air and Radiation (OAR) regulates the concentrations that can be sold for conventional vehicles. OAR has the authority to prohibit certain fuels that are not "substantially similar" based on emissions criteria. Flex vehicles can lawfully use a variety of concentrations. Blending E-20, E-30 and E-40 generally occurs at the pump. OAR allows all blends of biodiesel (including B-100) to be sold; however, their November 2007 guidance recommends the use of B-20.

In general terms, there are four common compatibility issues created by the use of alternative fuels:

- Accelerated corrosion of metal components;
- Permeation of non-metal components;
- Product phase separation;
- Solvency characteristics — suspending sludge into fuel.

The first three suggest leak prevention concerns; all four can affect fuel quality.

Accelerated Corrosion of Metal Components

Gasoline is not electrically conductive. Ethanol is. As metal corrosion is an electrical process, ethanol accelerates internal corrosion of metal tanks and piping by providing an electrolyte to the corrosion cell. Additionally, if phase separation occurs, water collects at the bottom of the tank. Water on steel similarly accelerates corrosion of metal that does not have the benefit of corrosion protection. Ethanol and biodiesel's solvent characteristics keep cleaning new rust from bare steel thereby exposing new steel and accelerating corrosion. The corrosion protection applied to tank systems by regulation reduces external corrosion but not internal corrosion.

Corrosion on metal components has not shown itself to be a problem in 25 years of low-ethanol use. Higher blends are more problematic for steel tanks. Additionally, brass, lead, magnesium, tin and zinc should not be used with E-85.

Permeation of Non-metal Components

Elastomers, polymers and alcohol-based glues are susceptible to ethanol permeation. Low-E blend fuels have a higher activity than E-85 fuels and therefore greater potential for permeation, swelling and performance degradation of non-metal UST components. Alcohol-based glues are more susceptible to E-85. Single-walled tanks manufactured before 1984 may be at risk for softening when exposed to ethanol. Because double-walled tanks were manufactured with hazardous substances in mind, these tanks are less susceptible to permeation. Montana only has 39 tanks at 18 facilities that are of concern. Of larger concern are older fiberglass piping, its glues and fittings, and the unknowns of plastic pipe.

Compatibility Distillation

The Corn Belt states, California, and the eastern seaboard have been using ethanol for quite a while. They are raising

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UST Systems and Alternative Fuels - *continued from page 4*

the profile of compatibility issues nationwide, and yet the problems seem more theoretical than evidentiary, so far. Montana is currently watching other states to see if the projected problems actually occur and to determine how best to address them.

Owners must monitor steel tanks for water and watch for signs of internal corrosion. They must be especially vigilant in early leak detection.

Fuel Quality

Of foremost concern to consumers is the issue of fuel quality. Consumers are the first to notice poor engine performance that may be related to degradation of fuel storage components or accumulation of water in the fuel distribution system that finds its way into their vehicles.

Fuel quality problems created by changing UST systems from gasoline to ethanol blends or from diesel to biodiesel are well documented. Retailers should mitigate the problems. Ethanol and biodiesel proponents offer sound advice for retailers on how to mitigate these concerns.

Three problems affect fuel quality:

1. The solvent characteristics of ethanol and biodiesel clean sludge and rust from the system and suspend it in the fuel;
2. phase separation; and
3. corrosion and chemical reaction can suspend foreign elements in the gasoline.

Solvency

Sludge forms in UST systems over time. Ethanol and biodiesel dissolve that sludge and suspend it in the fuel where it will plug up filters in dispensers and vehicles until the sludge is gone. Rust in steel tanks is scrubbed from the tanks and suspended in fuel as well.

The solution is to clean tank systems thoroughly before introducing alternative fuels, to filter fuel externally when changing, to use one micron filter in the dispensers and to change those filters frequently. Some facilities remove filters when repeated plugging impacts dispensing. The problem is then pushed onto vehicle fuel filters.

Phase Separation

As previously mentioned, phase separation can accelerate corrosion in steel tanks. Fuel quality issues can also surface. Water bonds preferentially with ethanol and at some levels of saturation will separate and sink, leaving the gasoline with no oxygenate and a layer of ethanol/water that will be pumped into vehicles if it reaches the level of the turbine pump. Either liquid will create operational problems for vehicles. The solution is to monitor the water level of the tank regularly and keep water out so that phase separation cannot occur. Owners must be especially vigilant for water accumulation and watch for signs of internal corrosion caused by water.

Dissolved Metals

E-85 dissolves some softer metals used in dispensing equipment, most notably aluminum and brass. Fuel chemical composition changes if it reacts with plastics. The resulting fuels may not be suitable for vehicle consumption. Before we contemplate solutions to this problem, we need more evidence of its significance. Degradation of dispensing equipment is the larger problem, which owner/operators can solve by using nickel plated aluminum and brass components.

Leak Prevention and Bottom Line

State regulatory agencies are concerned with preventing petroleum releases that are the result of compatibility problems that could be predicted and prevented. This is important in the interest of protecting human health and the environment, DEQ's primary mission.

The bottom line is there will be some cost associated with changing a gasoline fueling facility to an ethanol (>E-15) or biodiesel fueling facility. And owners and operators need to be aware of potential equipment compatibility problems when storing alternative fuels. ■

Vapor Intrusion

Petroleum industry representatives, regulators, environmental consultants and public health officials are now very familiar with typical investigation requirements for petroleum releases. Petroleum contamination investigations typically utilize test pits, soil borings and monitoring wells to define the extent and magnitude of soil and groundwater contamination. Protection of human health is the primary objective, with the ingestion of contaminated water usually seen as the most likely threat. However, it is important not to overlook the public health threat created by petroleum hydrocarbon vapor intrusion.

Vapor intrusion is defined as the mobilization of vapors from a contaminated source to within a building. Chemicals can volatilize from impacted soil and/or groundwater beneath a building. The Montana Department of Environmental Quality (DEQ) has identified vapor threats where soil gas flowed into a building through dirt floors in the basement, cracks in the foundation of finished basements or sumps designed to keep basements from flooding. Heating systems, exhaust fans and basement sumps can promote vapor intrusion. Strong winds can further add to vapor intrusion effects due to air pressure differentials in residential homes. The DEQ has also identified sites where vapors migrated along utilities, such as sewer lines, and enter buildings through the sewer drains.

Any investigation of a petroleum release must consider the indoor vapor pathway for any building overlying contaminated soil or groundwater. In addition, any utility corridor crossing the plume must also be investigated. It is not necessary for a utility corridor or a basement to be in direct contact with soil or groundwater contamination to be threatened by vapor intrusion. Vapor investigations may involve collecting soil gas samples, sampling vapors from underneath the building or collecting indoor air samples from within threatened buildings. Unless there are complaints of odors, indoor air samples should not be the first sample collected from a building, due to potential interference from indoor vapor sources such as cleaners, solvents, fuels, paints and glues. These consumer products may interfere with the analytical results collected during a vapor intrusion investigation and should be removed prior to sampling.

Investigation of the vapor pathway shall be conducted with the approval of the DEQ case manager. For more information regarding vapor intrusion, contact Aaron Anderson at (406) 841-5049 or **aaanderson@mt.gov**.

Sub-slab vapor sampling

DEQ recommends "Vapor Intrusion Pathway: A practical Guideline," prepared by the Interstate Technology & Regulatory Council (ITRC). This document is available for download from the following website: **www.itrcweb.org/teampublic_Vapor.asp** ■

Petro Factoid…
Sumps and Spill Buckets

Sumps and spill buckets degrade when they are in contact with petroleum for extended periods. They are not meant to hold product for any length of time.

Spill buckets wear out just sitting there. They should be considered maintenance items that need periodic replacement.

Spill bucket with fluid.

Groundwater Contamination and Wells

More than 50% of Montanans rely on groundwater sources for their household use. Groundwater is plentiful and the quality is generally excellent, but Montana's aquifers are vulnerable to pollution from increased human activity associated with population growth. Petroleum is one of the most plentiful human caused contaminants that pollutes groundwater.

Nationally, 51% of Americans relies to some extent on groundwater for a domestic water source. This percentage is even higher in rural areas. Our nation's dependence on this valuable resource is obvious.

In Montana, there are few documented examples of direct costs associated with contamination of groundwater. When contamination does occur, costs are incurred due to initial investigation, site remediation and sometimes because of the need to replace a drinking water supply. For example, contamination of a well used by the town of Opheim required the development of a new source. Similarly, nitrate contamination at Wilsall required the town to find a replacement source. Leaking petroleum product at Judith Gap required the town to construct a new well far outside the developed community. When groundwater contamination causes a public water supply to construct a new well, costs can reach as high as $250,000. (Ground Water Protection Council, Ground Water Report To Congress – Summaries of State Ground Water Conditions, October 1999) ■

SAVE THE DATE

Petroleum Tank Release Compensation Board

Monday – September 15, 2008
Monday – November 17, 2008
10:00 a.m. – 2:00 p.m.

Montana Department of Environmental Quality
Room 111 • Lee Metcalf Building
1520 East Sixth Avenue • Helena, MT 59620
Contact: Terry Wadsworth • 841-5092 • twadsworth@mt.gov

Montana Petroleum Consultants Meeting

Wednesday – November 19, 2008
1:00 p.m. – 3:00 p.m.

Montana Department of Environmental Quality
Room 112 • Last Chance Gulch Building
1100 North Last Chance Gulch • Helena, MT 59620
Contact: Mike Trombetta • 841-5045 • mtrombetta@mt.gov

Refresher Classes

Installer/Remover and Inspector Training

The UST Section of the Department of Environmental Quality will hold Installer/Remover and Compliance Inspector refresher classes on October 29th and 30th at the Lee Metcalf Building, Room 111 in Helena from 8:00 a.m. to 5:00 p.m. Licensed removers who need continuing education credits (CEC) credits can attend the Installer/Remover Refresher Class from 8:00 a.m. to 12:00 p.m. on October 29th. The address is 1520 East 6th Avenue, Helena, MT.

Current license holders are advised to check the expiration date of their license and ensure they have sufficient continuing education credits until the next department sponsored "refresher" classes. The refresher classes are only held annually in the fall.

A total of 16 hours of continuing CEC are required every three years to renew an installer or compliance inspector license. Eight hours of CEC are required every three years if you are licensed as a remover. At least eight of the 16 hours are required to specifically be a refresher course to renew an installer or compliance inspector.

Please contact Janie Petaja at 444-4656 or **jpetaja@mt.gov** to register.

Inspector training – showing defective installation

Refresher	Date	Time	Location
Installer/Remover Refresher	Wednesday – October 29, 2008	8 a.m. – 5 p.m.	DEQ - Room 111
Remover (ONLY) Refresher	Wednesday – October 29, 2008	8 a.m. – 12 p.m.	DEQ - Room 111
Compliance Inspector Refresher	Thursday – October 30, 2008	8 a.m. – 5 p.m.	DEQ - Room 111

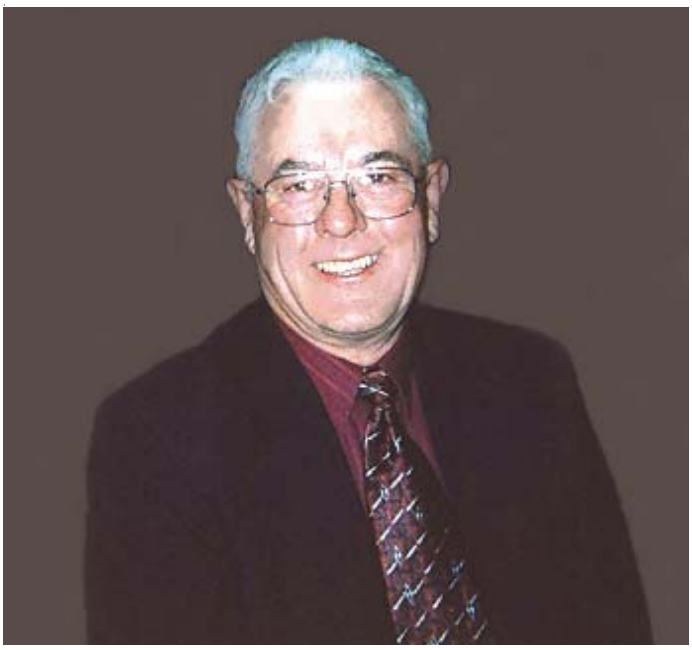
Compliance Inspector Training

The program will also conduct Compliance Inspector Training this fall for new Compliance Inspectors, but we have not yet scheduled it. The training will probably be in November.

Please contact the program if you are interested and we will keep you informed. New inspectors must submit an application with references and $100. A study guide is available for $210. ■

Inspector training – shear valves not anchored

Meet Karl Hertel



Karl Hertel

Karl Hertel has been a rancher and farmer in Moore, Montana all his life, and has felt a duty to serve the public on various boards throughout the years. "I believe that somebody has got to do a job to represent the people," says Karl.

He has just completed the first of a three year term on the Montana Petroleum Release Compensation Board. "It has been a learning experience and an important job," says Karl. "I try to do the best I can and always hope I do the right thing."

He feels the need to prioritize projects and protect the public. "We don't want a petroleum spill to make people sick. We have got to clean it up," says Karl.

He adds that common sense is important and we need to think about doing what makes sense, especially with a shrinking Petroleum Release Compensation Fund. "We need to get to what needs to be done over what can wait."

During his next two years on the Petro Board, Karl says he would like to help get the Petro Fund 'back in the money'. "Prioritizing the work load should help," he says.

Karl represents the insurance industry on the Petro Board. For the last four years, he has also served on the Farmers Union Mutual Insurance State Board. He spent nine years on the Board of Directors for the Northwest Farm Credit Services, which governs five states. He was on the PCA Federal Land Bank Board in Lewistown for 12 years, and the Moore School Board for six years.

When Karl is not ranching or serving on boards, he enjoys hunting, fishing and traveling inside and outside of Montana. "We have been to Norway, and just took a cruise to Alaska this spring."

Karl earned a Bachelors of Science Degree in Agriculture Economics from Montana State University. He has been married to his wife, Marion for 44 years. They have two sons and one daughter. Rene McNeil lives in Florida, Toby in Denver, and Koly works the ranch in Moore with Karl. "I will be retiring soon and Koly will take over."

Fortunately, Karl is far from retiring from the Petro Board. Thank you Karl for your continued public service! ■

TankHelper Kudos

Although the online *TankHelper* program of the Montana Department of Environmental Quality (DEQ) was selected as a top finalist for the 2008 Intergovernmental Solutions Awards, the State of Alabama Department of Homeland Security took first place in the state and local category for its web program, *Virtual Alabama*. *TankHelper* was one of four finalists in that category. The awards were sponsored by the American Council for Technology.

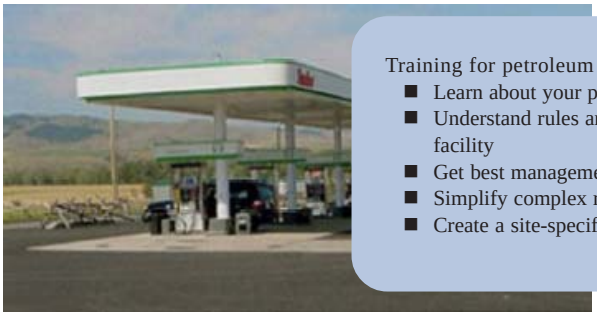
The DEQ Underground Storage Tank Program is developing a second version of *TankHelper* that will comply with EPA's Operator Training Guidelines in response to the Energy Policy Act of 2005.

TankHelper also received a national Best of theWeb Award for eGovernment Excellence in 2007. Plus, *TankHelper* was a 2007 recipient of the State of Montana Information Technology Project Excellence Awards in the category of Innovation and Creativity. ■

Montana TankHelper

Online Underground
Storage Tank Operator Training is Free & Easy!

Simply log on to TankHelper, identify your facility and proceed through the service. When you finish, you can print out a plan that will help you manage your underground storage tanks.



Training for petroleum system operators to:

- Learn about your petroleum equipment
- Understand rules and responsibilities for your facility
- Get best management practices
- Simplify complex regulations
- Create a site-specific management plan

tankhelper.mt.gov

jUST Jargon – Shear Valves

Shear valves, also called crash valves, emergency shut-off valves and impact valves, are installed in pressurized fueling systems to shut off the flow of fuel in case of a collision or fire. They are the last piece of equipment in the fueling line that the DEQ regulates. Montana's Fire Marshal regulates fuel dispensers.

To function properly in the event of a collision, the shear valve must be properly anchored to the concrete or sump pan. Otherwise the dispenser just pulls the piping with it when a vehicle knocks the dispenser over and fuel will be sprayed around at about 25 pounds of pressure per square inch.

Shear Valves

Acknowledgements to those involved in the production of the summer 2008 *MUST News:*

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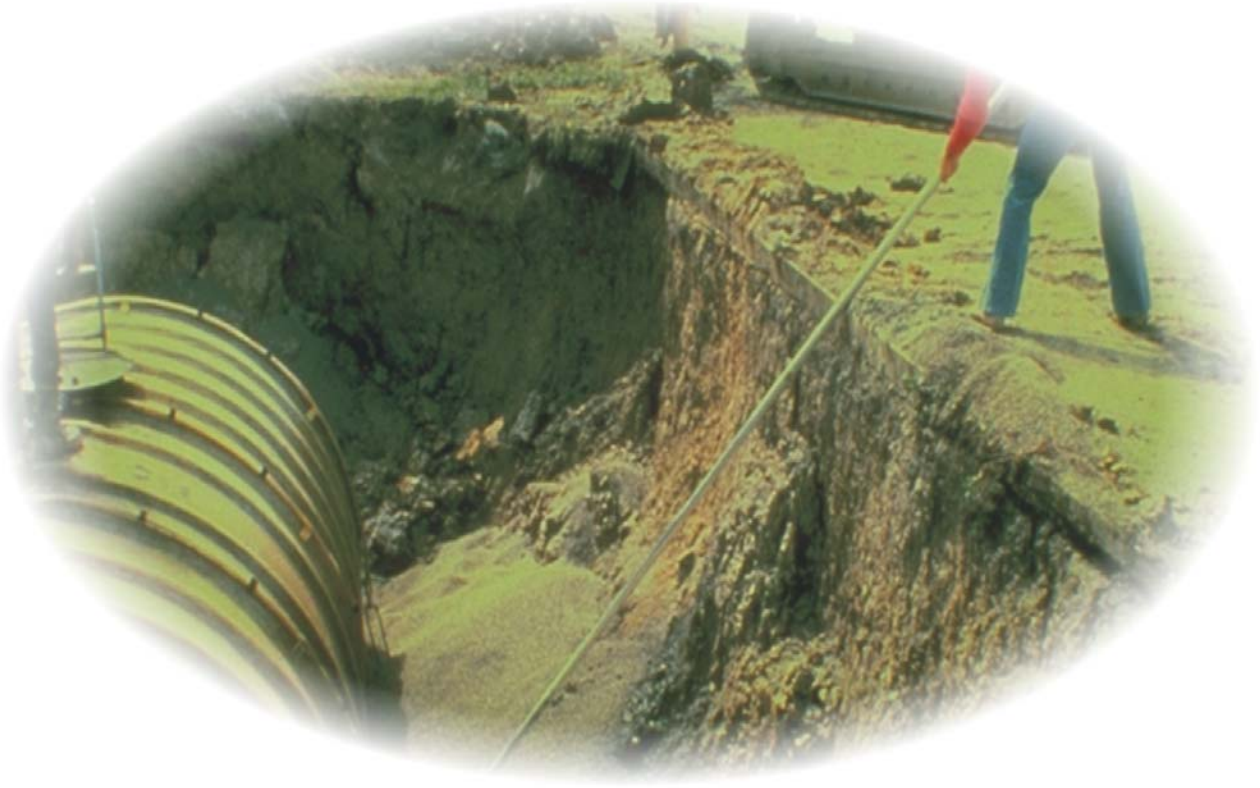

Backfilling an UST